GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF FEBRUARY 16, 1991

1. Western North America:

DRY WEATHER DOMINATES.

Less than 5 mm fell throughout California while only 10–25 mm were measured at scattered locations across the northern Intermountain West and eastern British Columbia. Since early January, deficits of 60–175 mm have accumulated across most of California, with shortfalls of 200–400 mm reported at higher elevations. North of California, only 20%–50% of normal precipitation has fallen during the period [7 weeks].

2. Eastern Canada and Southwestern Greenland:

COLD SNAP ENDS.

Temperatures averaged only slightly below normal (–1°C to –3°C) across Labrador and near normal in Newfoundland and Nova Scotia while very mild weather, with weekly departures above +6°C, moved into Baffin Island and western Greenland, bringing an end to the recent cold spell [Ended after 7 weeks].

3. Southeastern United States:

DRIER WEATHER ENGENDERS SOME RELIEF.

Less than 15 mm of precipitation was measured at most locations, although scattered locations across the northern lower Mississippi Valley reported up to 40 mm; however, six–week surpluses of 250–485 mm remained across the central and east–central Gulf Coast, and sizable positive departures persisted elsewhere, except along the south Atlantic seaboard [Ending after 12 weeks].

4. Eastern South America:

EASTERN URUGUAY AND ADJACENT BRAZIL REMAIN PARCHED.

Moderate rain (15–45 mm) fell from south–central Paraguay into most of southeastern Brazil, ending the dry spell across northern sections of the afflicted region. In contrast, less than 10 mm was measured across eastern Uruguay and adjacent Brazil, allowing moisture deficits to increase. Since mid–December, most of eastern Uruguay and adjacent Brazil have accumulated 75–210 mm deficits [9 weeks].

5. Europe

COLD, DRY WEATHER PERSISTS AT MOST LOCATIONS.

Milder weather was reported across the fringes of the continent, specifically in Ireland, the Balkans, and western Turkey, where weekly departures of –1°C to +5°C were observed. Chilly conditions continued elsewhere, with temperatures averaging 2°C to 4°C below normal in Great Britain, eastern Europe, Italy, and the Iberian Peninsula and 4°C to 12°C below normal elsewhere [4 weeks]. In addition, light to moderate precipitation brought some relief to central and southeastern Europe, much of Italy, the western Iberian Peninsula, eastern and northern coastal France, and southeastern Scandinavia. Heavy precipitation, with scattered locations measuring 50–115 mm, was reported in northern and southern Yugoslavia, the Alps, Italy, coastal Spain, and Portugal. Elsewhere, under 10 mm fell. Since early January, less than 50% of normal precipitation has fallen on most locations, and much of Albania has recorded only 5%–20% of normal [9 weeks].

6. Southern Africa:

HEAVY RAIN CONTINUES, ESPECIALLY IN NORTHERN SECTIONS.

Moderate precipitation, with amounts of 20–60 mm, kept central South Africa and southern Botswana damp. Farther north, heavy rains (40–100 mm) were again widespread across eastern Namibia, northern Botswana, Zimbabwe, most of Zambia, and Malawi, with very large totals of 100–175 mm measured across east–central Namibia, northwestern Zambia, northern Zimbabwe, and central Malawi, allowing moisture surpluses to remain very high [7 weeks].

7. The Philippines

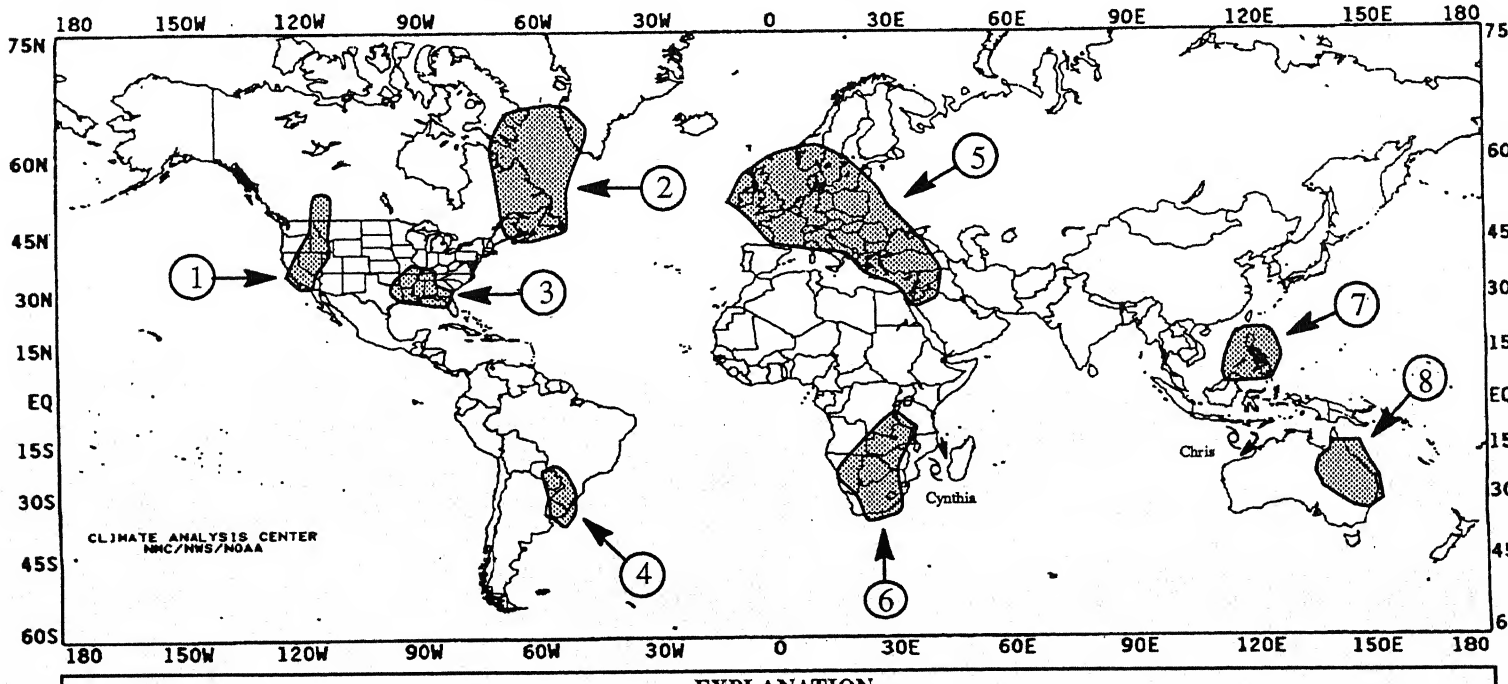
SECOND CONSECUTIVE WINTER DROUGHT CONTINUES.

Very light precipitation fell on most locations as only isolated totals of 10–30 mm were measured in eastern Mindanao, northern Mindoro, and west–central Luzon. Since early January, most locations have received 100–375 mm less than normal rainfall (see front cover) [11 weeks].

8. Northeastern Australia:

NORTHERN AND EASTERN QUEENSLAND REMAIN EXCEPTIONALLY WET.

Drier conditions through interior central Queensland and along the southern tier of the state allowed moisture surpluses to drop slightly, but very heavy rainfall elsewhere kept excessively large precipitation surpluses intact across east–central coastal Queensland, west–central Queensland, and throughout the northern tier of the region, including the Cape York Peninsula. Totals of 50–175 mm were observed in the aforementioned areas, with excessive amounts (200–270 mm) reported from northeastern coastal Queensland northwestward to the west–central coast of the Cape York Peninsula. Six–week departures of 400–700 mm were common east of the northern and central Great Dividing Range [8 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.
MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long–term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF FEBRUARY 10 THROUGH FEBRUARY 16, 1991

Wintry weather returned to the eastern half of the country while spring–like warmth prevailed across the western U.S. Frigid Arctic air, accompanied by strong wind gusts, produced dangerous wind chills and some of the coldest weather this Winter from Michigan to Florida. Numerous daily record lows were reported across the Southeast Saturday morning as readings dipped into the twenties as far south as Daytona Beach, FL, with teens common in central sections of Mississippi, Alabama, Georgia, and the Carolinas. Hard freeze warnings were issued for the central Florida citrus areas, but damage to crops was minimal. Heavy lake–effect snows buried parts of the Midwest and western New England with up to two feet of snow. White–out conditions contributed to numerous accidents in Indiana, which in turn forced the closure of many highways for several hours. In contrast, unseasonably mild and dry conditions enveloped the western half of the country as highs soared into the seventies from the central Great Plains to southern sections of the Pacific Northwest. Severe thunderstorms erupted over the middle Mississippi Valley where the contrasting air masses collided. In Alaska, unusually mild conditions covered much of the state as readings soared into the thirties and forties at most locations.

The week started with relatively tranquil conditions as most of the nation was under the influence of high pressure. A cold front across the northern U.S. ushered in the leading edge of much colder air to portions of the upper Midwest and New England. The mercury at International Falls, MN plummeted below 0°F Sunday night as the front pushed through, ending a string of 209 consecutive hours at or above zero dating back to February 1. Strong winds accompanied the cold air, generating dangerous wind chills of –40°F and creating lake–effect snow squalls across the Great Lakes snow belts. As much as 16 inches of snow was recorded near North Rose and Wolcott in western New York. Meanwhile, warm and dry conditions prevailed throughout most of the West, with several daily record highs being tied or broken across the Southwest as highs approached 90°F in southern California. The exceptions to this tranquil weather pattern included the Pacific Northwest and central Rockies. Up to 2.5 inches of rain fell along the coasts of Washington and northern Oregon from an approaching cold front. Farther east, a developing storm system over the central High Plains generated high winds and over a foot of snow at some northern and central Colorado locations.

During the last half of the week, the storm system over the central Plains slowly tracked northeastward and intensified. Severe thunderstorms erupted over parts of the middle Mississippi Valley and central Gulf Coast states, producing torrential downpours, wind gusts up to 60 mph, golf ball sized hail, and tornadoes that touched down in Delta and Scott City, MO. The storm system gradually pushed northward from the eastern Ohio Valley into southeastern Canada, spreading a variety of precipitation from the Deep South to New England. Strong northerly winds behind the system funneled bitterly cold Arctic air into the eastern half of the U.S., triggering lake–effect snows that dumped up to two feet on snow belt regions. Unseasonably warm and dry weather persisted in the West except for portions of Utah where up to 6 inches of snow fell on Saturday.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) occurred in parts of the Tennessee Valley, southern and central Appalachians, along the Pacific Northwest Coast, in the northern Cascades, and along the southeastern coast of Alaska [Table 1]. Light to moderate totals were recorded in the Pacific Northwest eastward into the northern and central Rockies, extreme southern Arizona and New Mexico, throughout most of the eastern third of the nation, and in much of Hawaii and Alaska. Little or no precipitation was observed in the Southwest including California, the southern Rockies, most of the Plains, and along the Gulf and southern Atlantic Coasts.

Unseasonably mild conditions covered the western half of the country, with weekly departures between +10°F and +17°F from the Southwest northeastward into the northern Plains [Table 2]. Elsewhere, temperatures averaged 5°F to 10°F above normal from West Coast eastward to the Mississippi Valley. Highs in the seventies were reported in California, the Southwest, the southern half of the Great Plains, and along the Gulf and southern Atlantic Coast states [Figure 1]. Mild weather also dominated much of Alaska during the week. Departures of +11°F to +25°F were recorded across the central and northern sections while departures of +6°F to +10°F occurred in the southern portion of the state. Highs rose above freezing at most Alaskan stations with the exception of northern and interior locations. Above normal temperatures also continued for the second consecutive week across Hawaii with weekly departures up to +3°F.

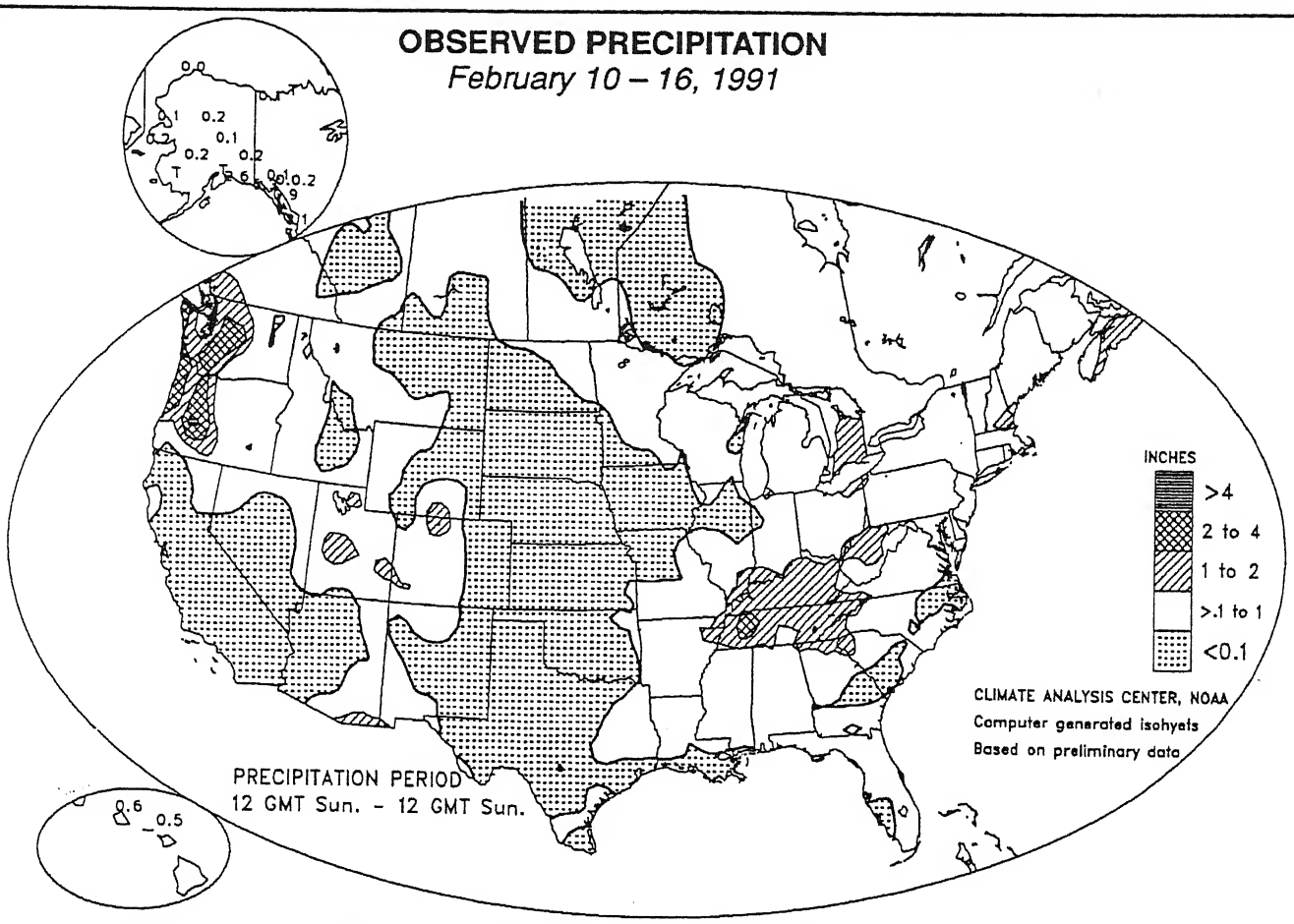
In sharp contrast, unseasonably cold conditions occupied the eastern third of the nation during the latter portion of the week as bitterly cold Arctic air dove southward out of Canada. Daily temperatures averaged more than 15°F below normal at several locations, but weekly negative departures were diminished in magnitude due to unusually mild weather early in the week. As a result, temperatures only averaged between 3°F and 6°F below normal from Florida to the Ohio Valley and across portions of northern New England [Table 3]. The cold blast, however, pushed far enough south to warrant freeze warnings across southern Florida, and it produced 27 record lows on Saturday in the Southeast and mid–Atlantic. After recording numerous days in the eighties the past few months, Miami, FL struggled to reach a maximum of 57°F on Saturday, a full 13°F lower than the previous "coldest" high (on Jan. 22) this Winter.

TABLE 1. Selected stations with 1.50 or more inches of precipitation for the week.

STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
YAKUTAT, AK	5.28	BRISTOL, TN	2.14
KODIAK, AK	4.49	MT. WASHINGTON, NH	2.11
KETCHIKAN, AK	4.44	STAMPEDE PASS, WA	2.05
ANNETTE ISLAND, AK	3.08	JACKSON, TN	1.80
QUILLAYUTE, WA	3.06	VALDOSTA/MOODY AFB, GA	1.74
CORDOVA/MILE 13, AK	2.61	BRUNSWICK, GA	1.63
ASTORIA, OR	2.61	HILO/LYMAN, HAWAII, HI	1.56

OBSERVED PRECIPITATION

February 10 – 16, 1991



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

February 10 – 16, 1991

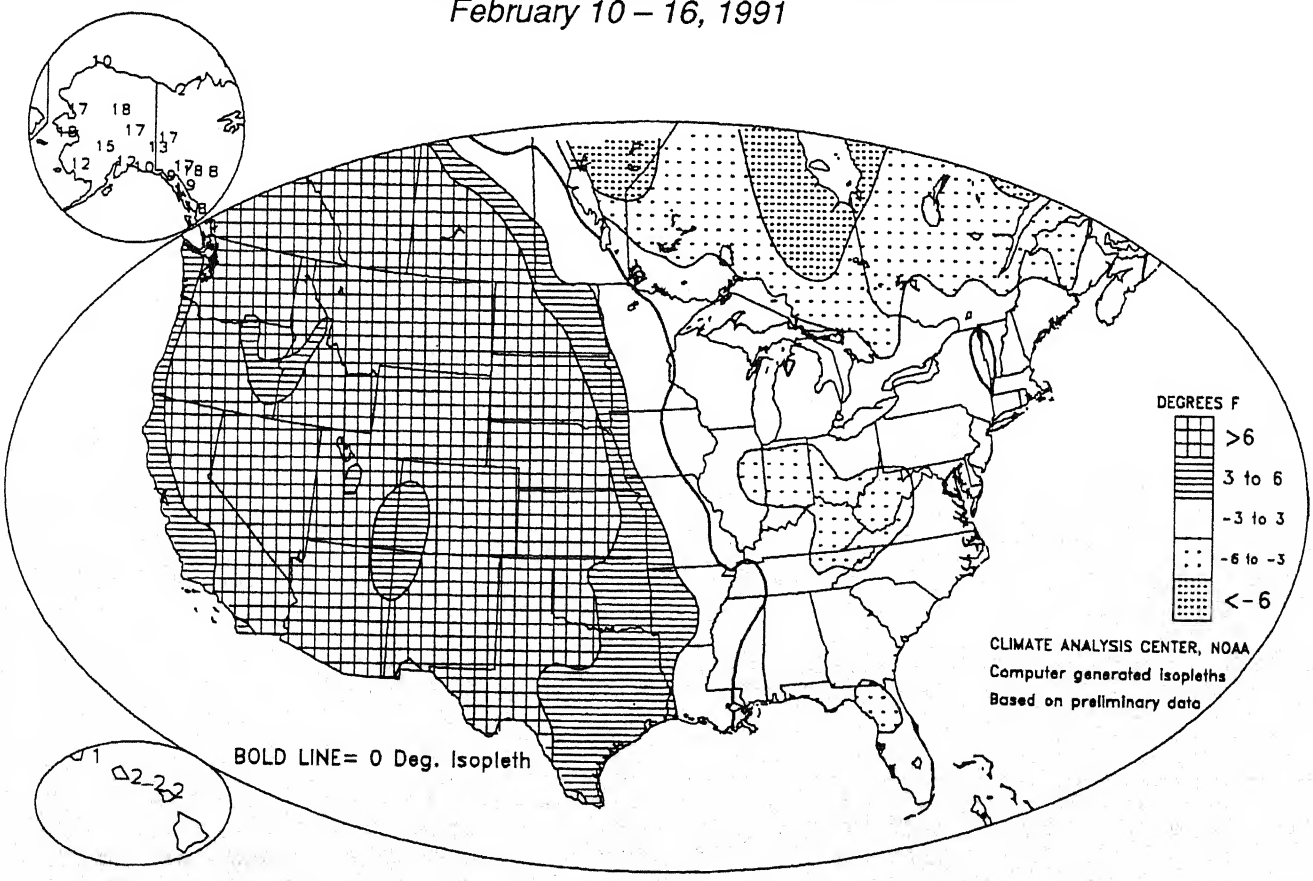


TABLE 2. Selected stations with temperatures averaging 12.0°F or more ABOVE normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
BETTLES, AK	+19.0	13.3	NORTHWAY, AK	+13.7	3.4
NOME, AK	+18.5	21.9	GREAT FALLS, MT	+13.6	40.6
FAIRBANKS, AK	+17.7	13.1	HELENA, MT	+13.4	39.4
BIG DELTA, AK	+17.6	19.4	BUTTE, MT	+13.4	34.8
KOTZEBUE, AK	+17.2	12.3	HAVRE, MT	+13.3	33.6
WORLAND, WY	+17.0	37.8	PHOENIX, AZ	+13.2	69.1
BOZEMAN, MT	+16.9	38.5	TALKEETNA, AK	+13.2	27.7
LEWISTOWN, MT	+15.7	39.9	ILIAMNA, AK	+13.0	30.4
MCGRATH, AK	+15.5	13.0	BETHEL, AK	+12.8	18.6
MILES CITY, MT	+14.5	36.1	VICTORVILLE/GEORGE AFB, CA	+12.6	58.0
CUT BANK, MT	+14.4	36.7	VALDEZ, AK	+12.5	34.6
KING SALMON, AK	+14.4	28.8	CASPER, WY	+12.4	39.4
BILLINGS, MT	+13.8	42.2	ANCHORAGE, AK	+12.3	30.0
GLASGOW, MT	+13.7	28.6	SHERIDAN, WY	+12.2	38.4

TABLE 3. Selected stations with temperatures averaging 4.0°F or more BELOW normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
ST. PAUL ISLAND, AK	-10.0	12.1	PARKERSBURG, WV	-4.6	28.8
MT. WASHINGTON, NH	-6.5	-2.0	HUNTINGTON, WV	-4.5	30.8
ELKINS, WV	-6.5	26.4	SAULT STE. MARIE, MI	-4.4	9.4
GAINESVILLE, FL	-5.6	53.4	DAYTON, OH	-4.2	25.2
BLUEFIELD, WV	-5.3	27.9	ALTOONA, PA	-4.2	25.2
CARIBOU, ME	-4.9	7.4	BRISTOL, TN	-4.2	33.3
CHAMPAIGN, IL	-4.8	24.4	BECKLEY, WV	-4.1	27.9
CROSSVILLE, TN	-4.7	33.6	MIAMI, FL	-4.0	63.5

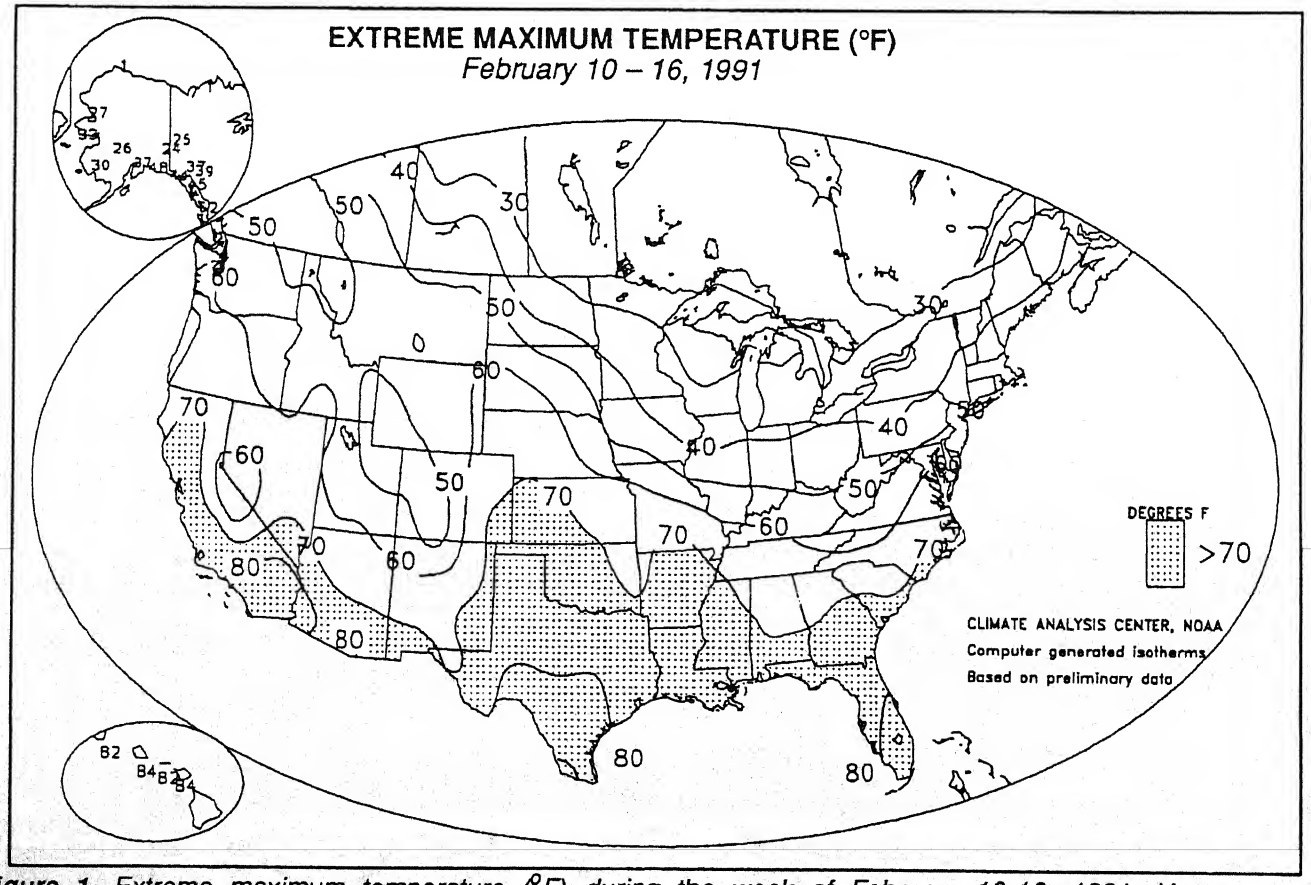
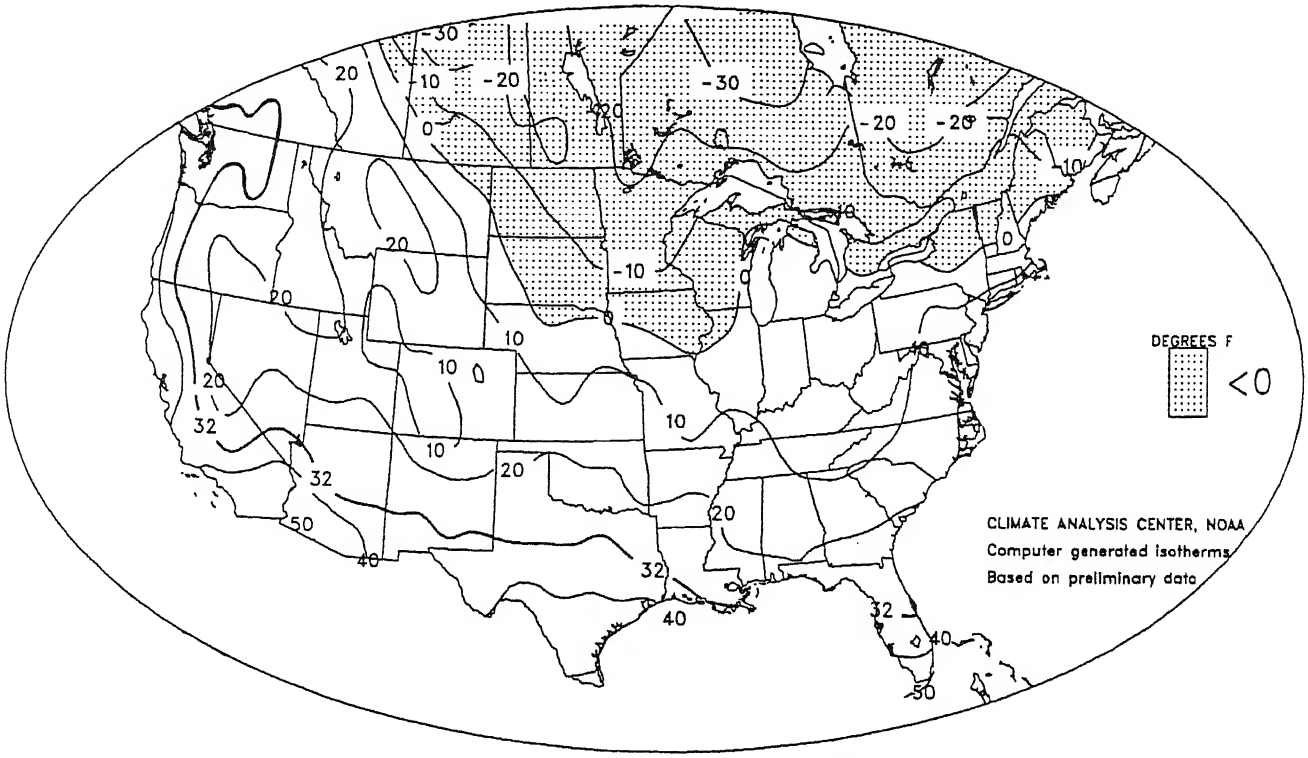


Figure 1. *Extreme maximum temperature (°F) during the week of February 10-16, 1991. Unseasonably mild weather prevailed across much of the West and Alaska throughout the period and in the eastern half of the country during the first half of the week. Readings in the upper seventies and lower eighties early in the week, however, eventually dropped well below freezing along the central and eastern Gulf Coast and in central Florida as the week ended* *[see page 5]**.*

EXTREME MINIMUM TEMPERATURE (°F)

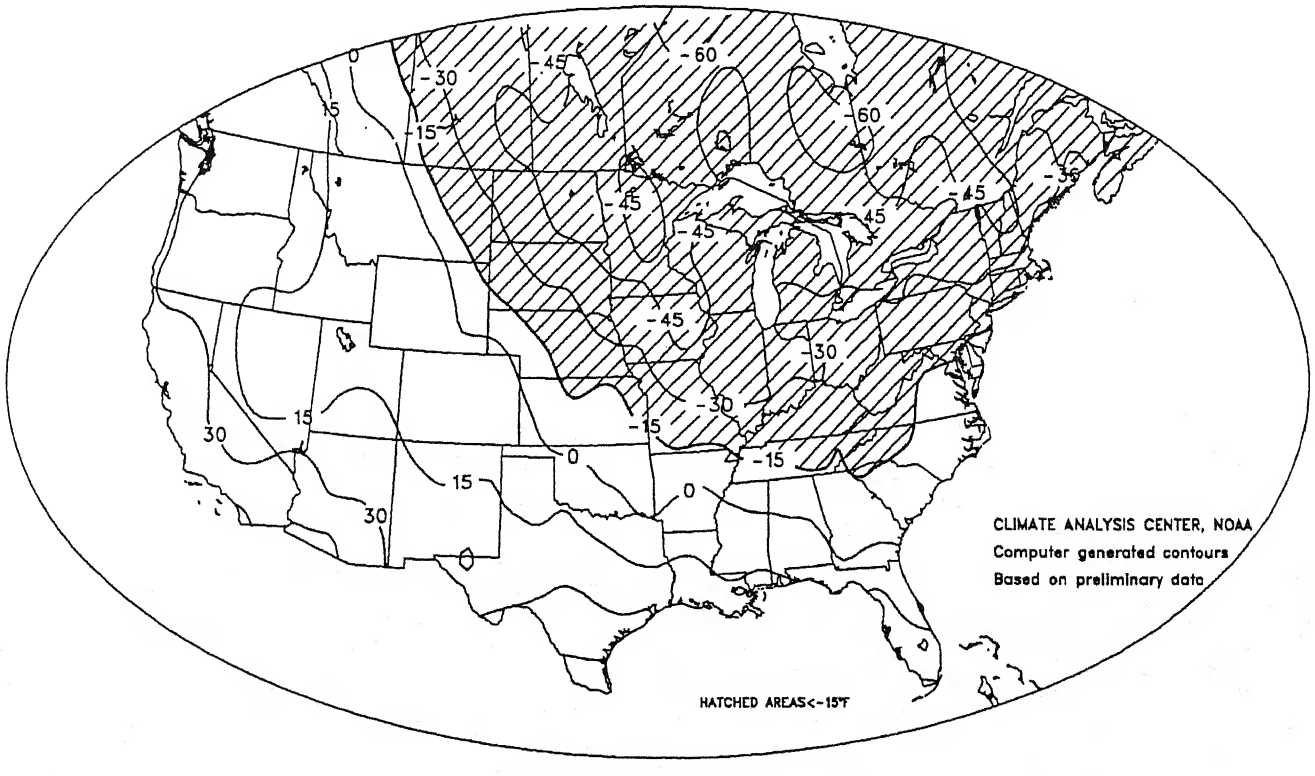
February 10 – 16, 1991



Late in the week, bitterly cold Arctic air returned to the north–central U.S. and northern New England with sub–zero readings. Well below normal temperatures were reported in the East and Southeast, where freezing temperatures reached central Florida (top). Gusty winds accompanied the Arctic blast, producing dangerous wind chills (<–30°F) in the northern Plains, upper and middle Mississippi Valley, and northern New England (bottom).

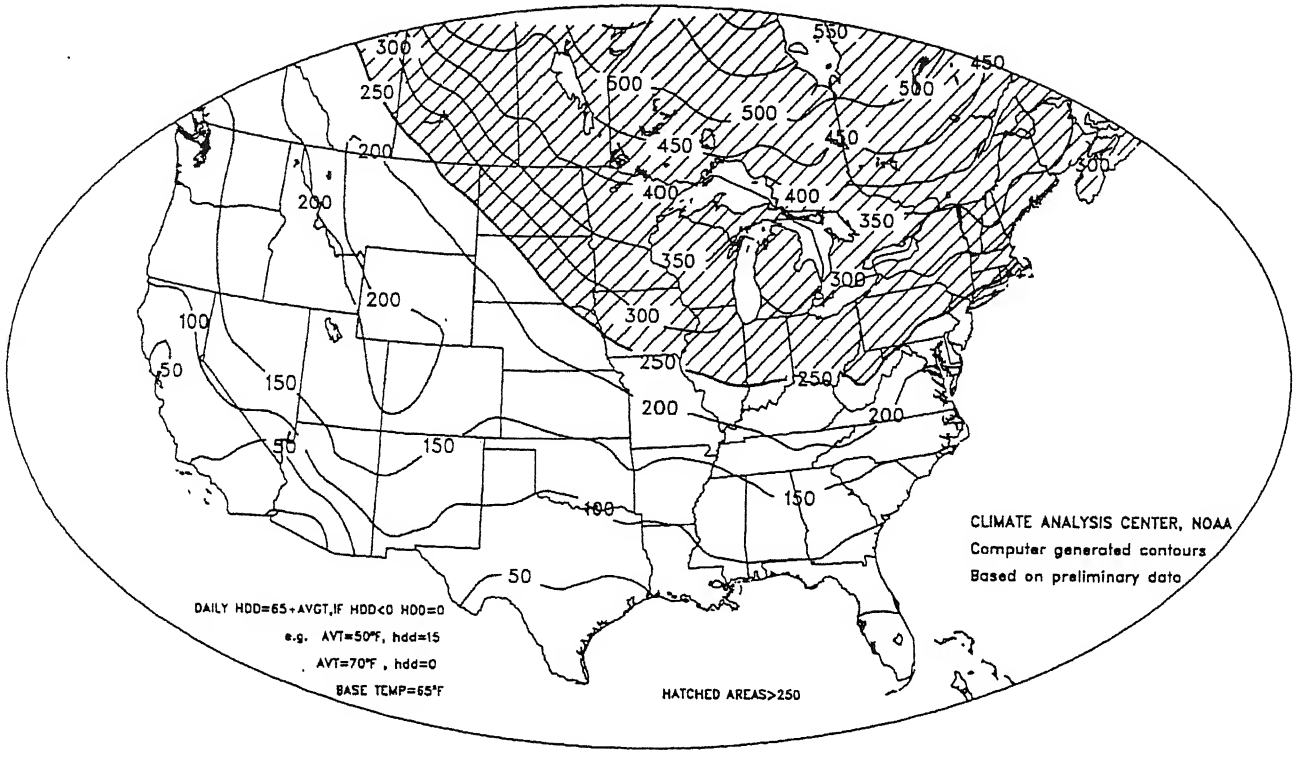
MINIMUM WIND CHILL (°F)

February 10 – 16, 1991



WEEKLY TOTAL HEATING DEGREE DAYS

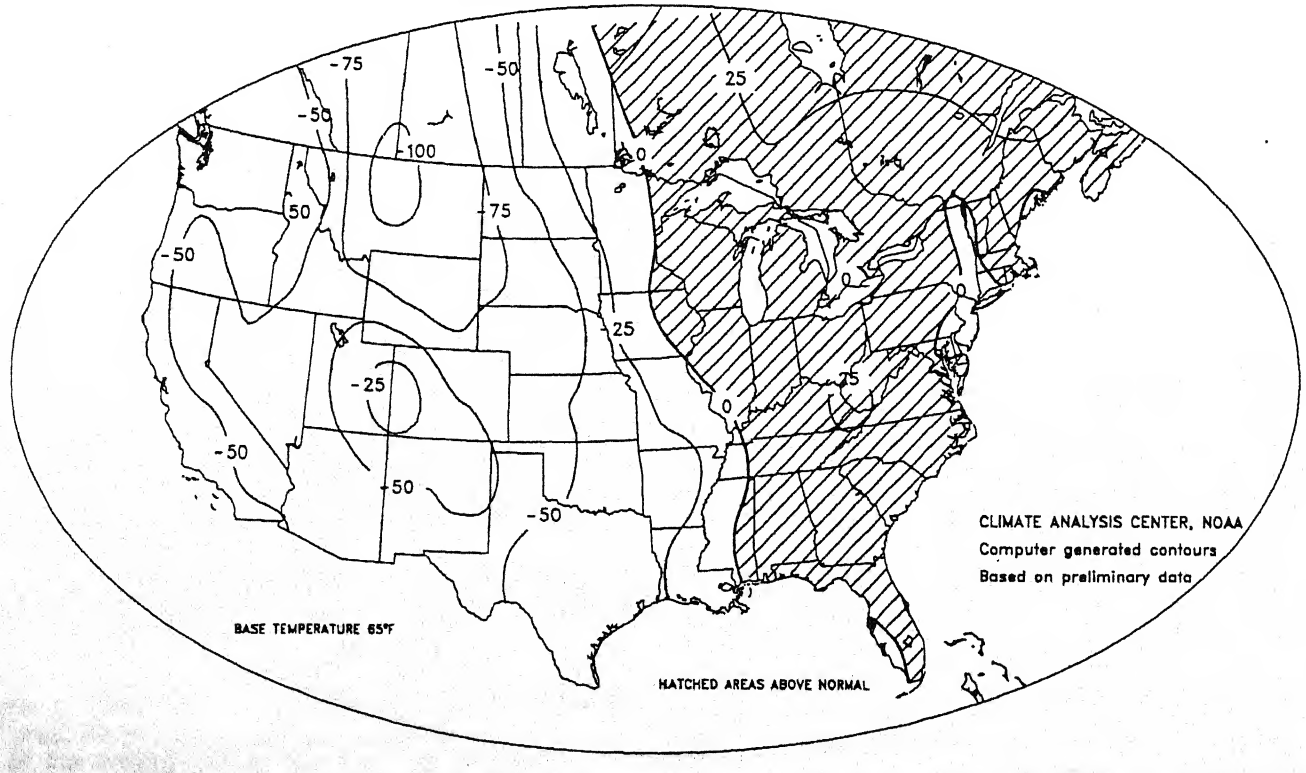
February 10 – 16, 1991



Arctic air late in the week generated substantial heating usage (>250 HDD's) from the northern plains across the Ohio Valley, and to the Northeast (top). Milder than normal conditions resulted in below normal heating demand for the western two thirds of the nation (bottom).

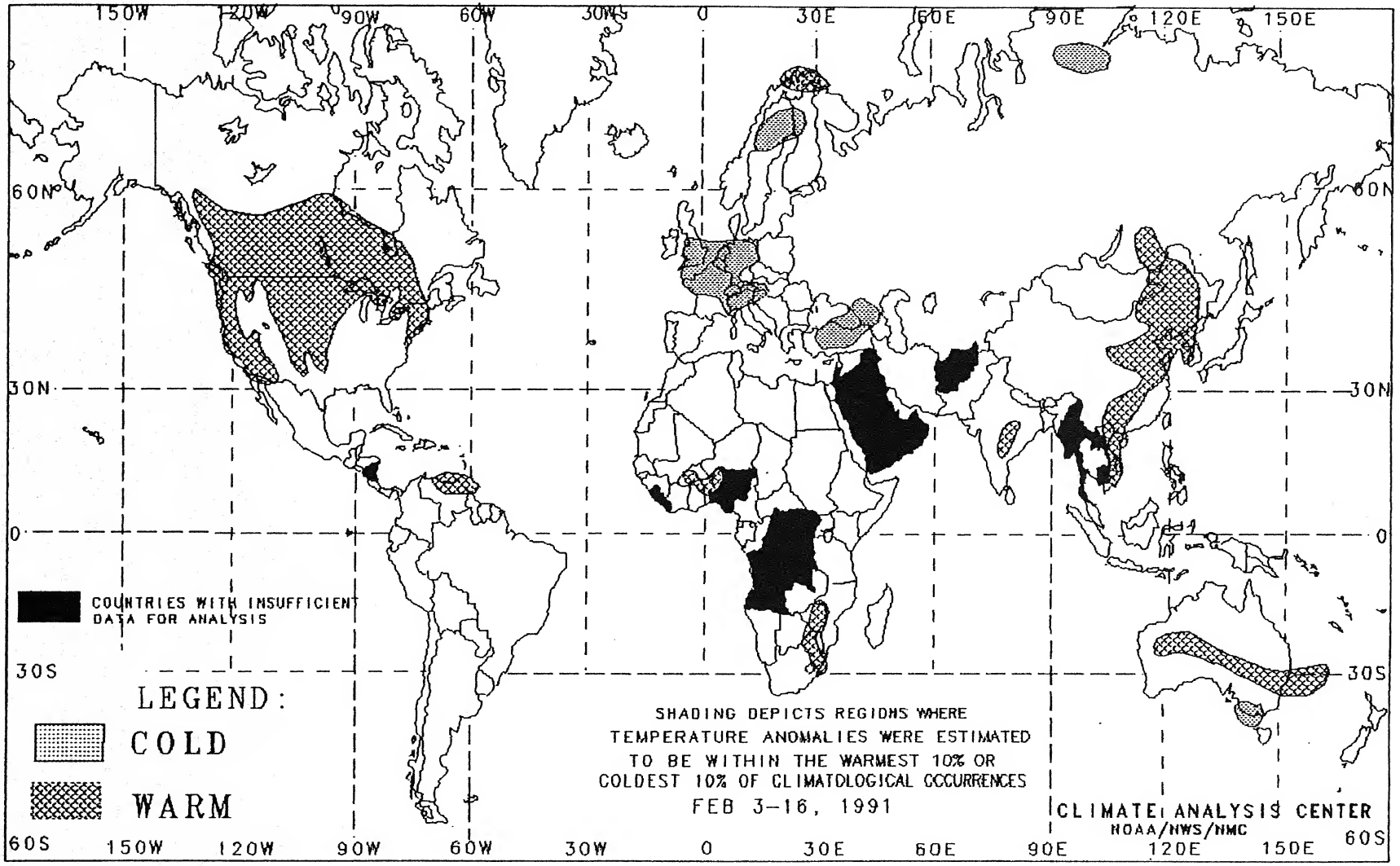
WEEKLY DEPARTURE FROM NORMAL HDD

February 10 – 16, 1991



GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty–four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

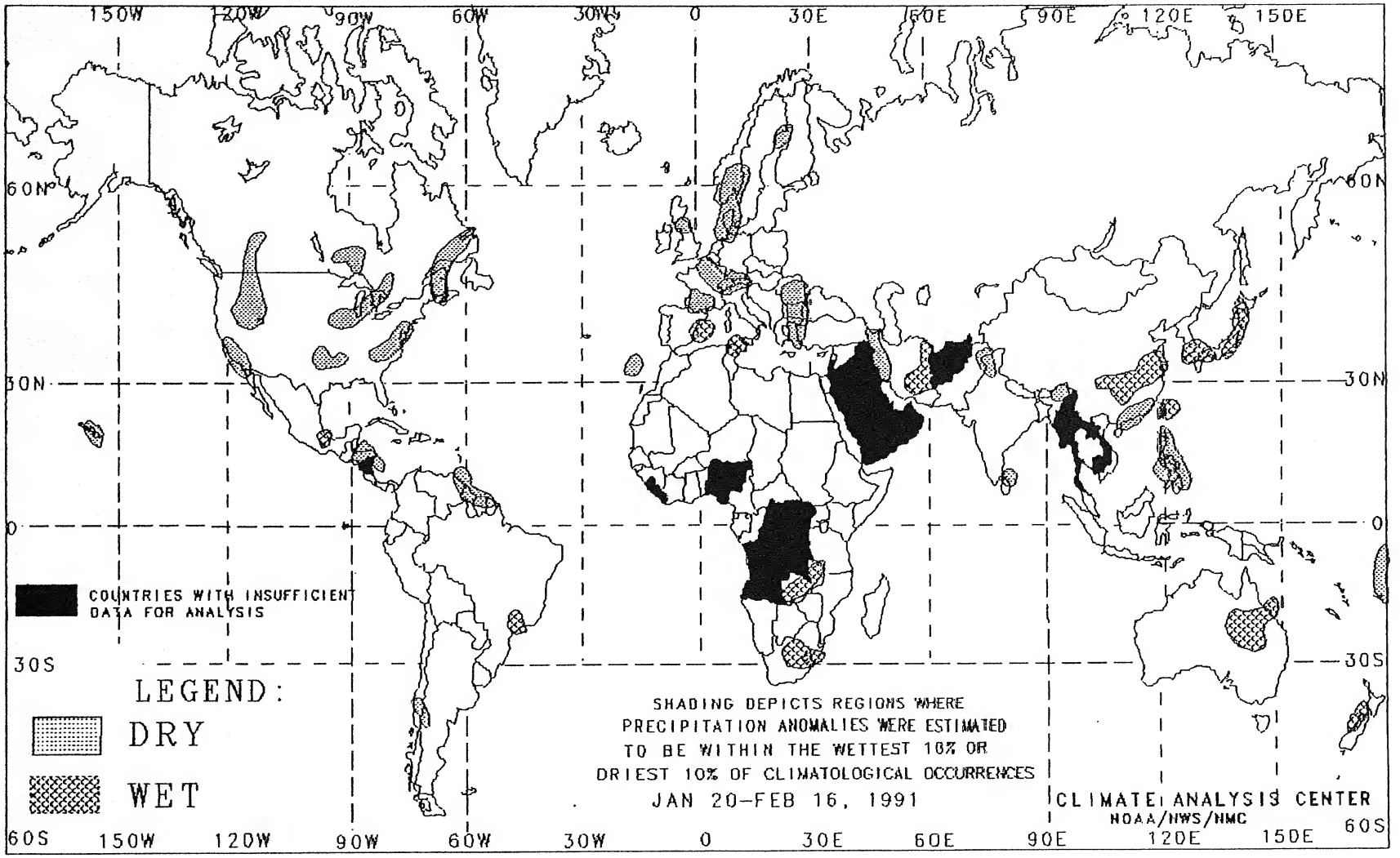
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 91/02

issued by

DIAGNOSTICS BRANCH
CLIMATE ANALYSIS CENTER, NMC
NATIONAL METEOROLOGICAL CENTER, NOAA

February 11, 1991

Warmer than normal sea surface temperatures (SSTs) were observed in the central equatorial Pacific during January while low–level easterlies returned to near normal intensity. SST anomalies increased slightly in the Niño 3 region, decreased in the Niño 4 region, and remained near zero along the South American coast [Figure 1]. During the last year, positive SST anomalies have slowly increased in the equatorial Pacific in the region from 170°E eastward to 120°W [Figure 2b]. Accompanying this trend in the SST anomalies, the warmest water has shifted east from near 160°E one year ago to near 175°E in January 1991 [Figure 2a]. Very little change has been observed in the pattern of SST anomalies in the extreme eastern equatorial Pacific during the last year.

Since December 1989, weakly enhanced convection has been observed in the western equatorial Pacific (between 160°E and the date line) [Figure 3], which is in the region of the warmest water and positive SST anomalies. During this period, weak westerly 850 mb zonal wind anomalies were generally observed throughout the equatorial Pacific [Figure 4].

It is evident from the above figures that a weak central Pacific warm episode has been in progress during the last year. However, persistent enhanced convection has failed to develop in the central equatorial Pacific, and the atmospheric circulation features typical of warm episodes have not been observed. On the other hand, both the depth of the thermocline and the upper ocean heat content continue to be greater than normal in the equatorial Pacific. Given these features plus the continued presence of positive SST anomalies in the central Pacific, the situation in the tropical Pacific continues to warrant close monitoring. The next Advisory will be issued when significant further developments are observed.

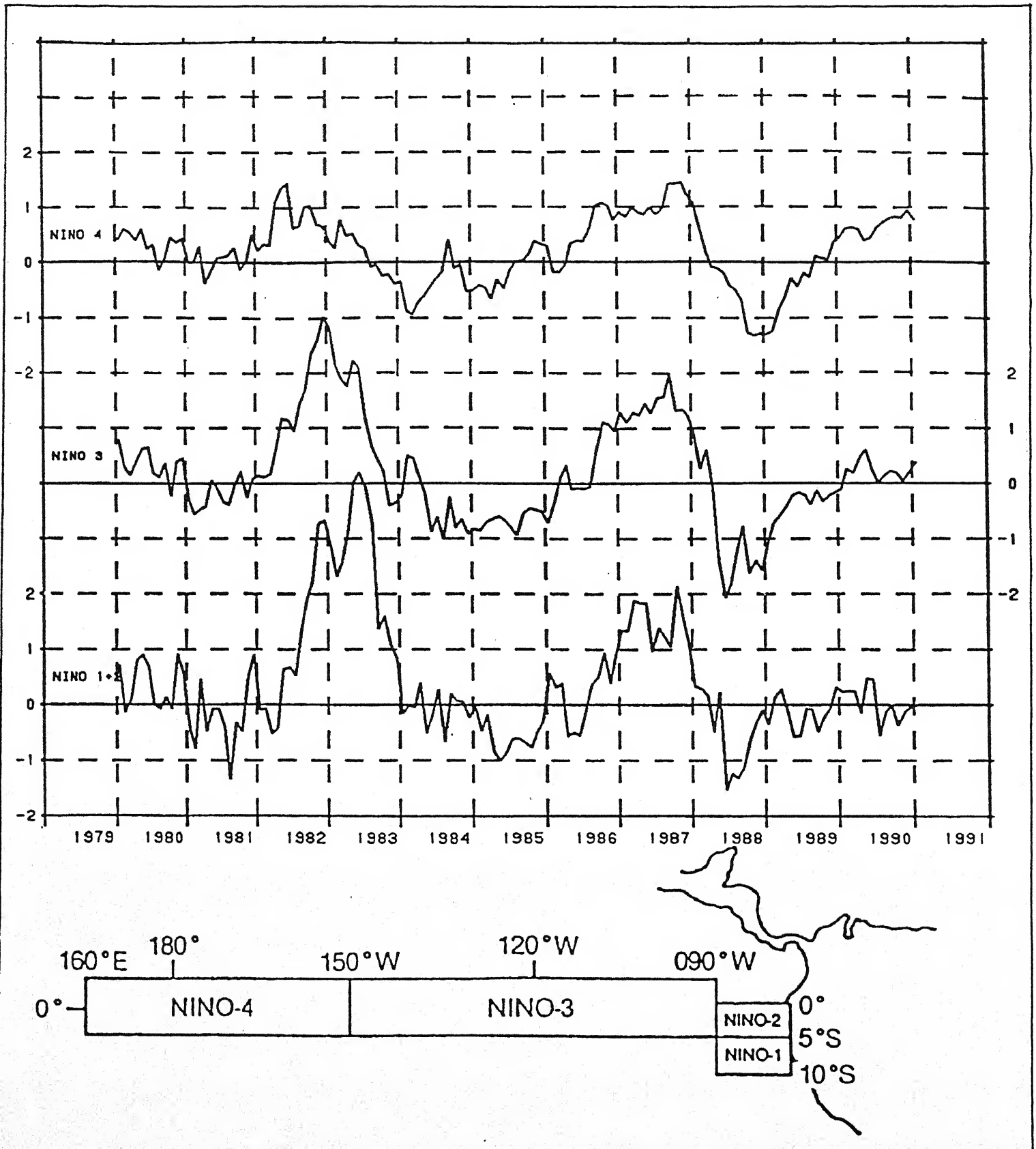


Figure 1. *Equatorial Pacific sea surface temperature anomaly indices (°C) for the areas indicated at the bottom of the figure. Nino 1+2 is the average over the Nino 1 and Nino 2 areas.*

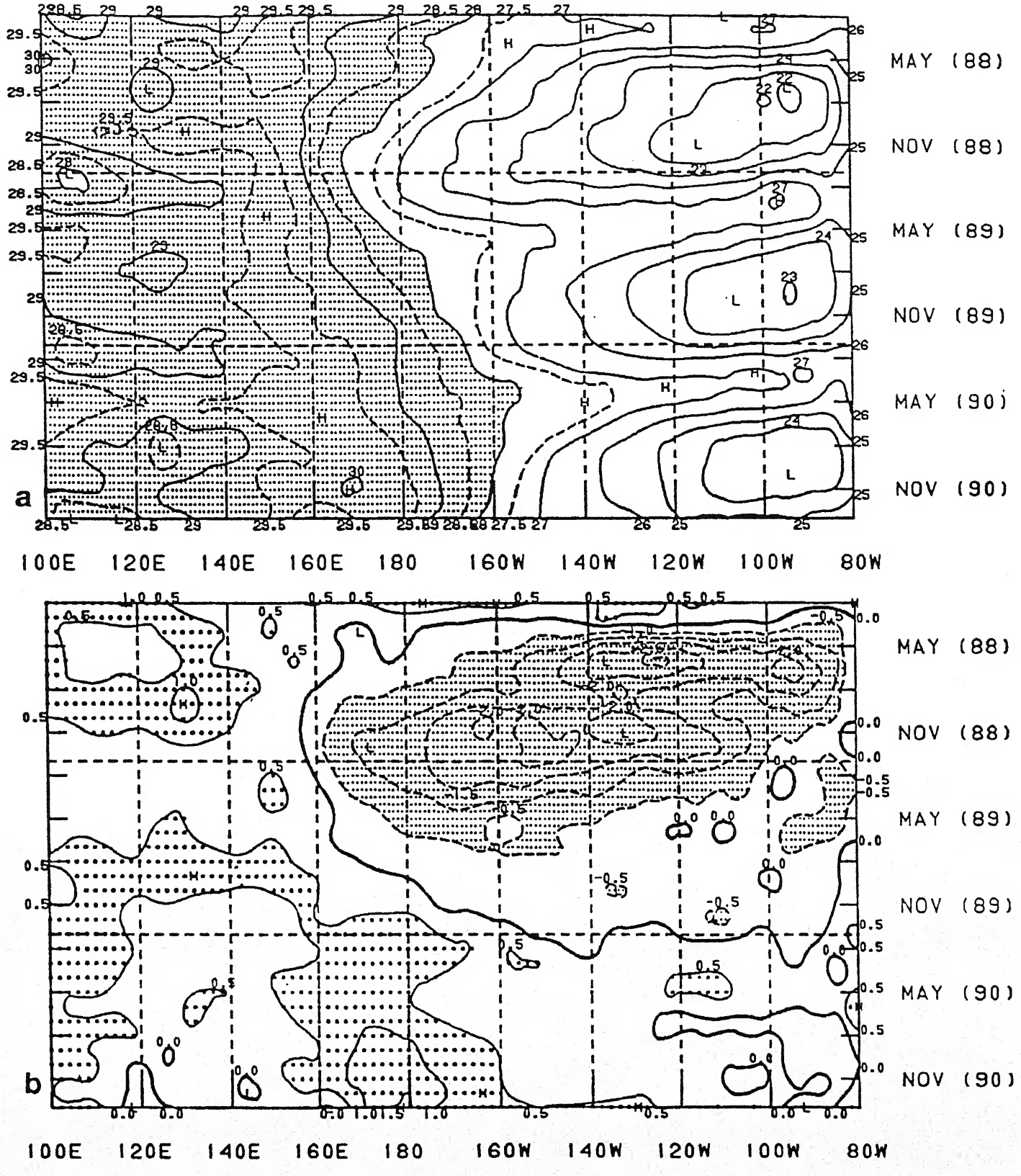


Figure 2. Time-longitude section of monthly sea surface temperature, a) mean and b) anomalous, for 5°N-5°S. Contour interval is 1°C and 0.5°C, respectively. SST values greater than 28°C and anomalies less than -0.5°C are compactly dotted. Sparsely dotted areas indicate anomaly values greater than +0.5°C. A 1-2-1 filter in time is used on all points prior to the current month.

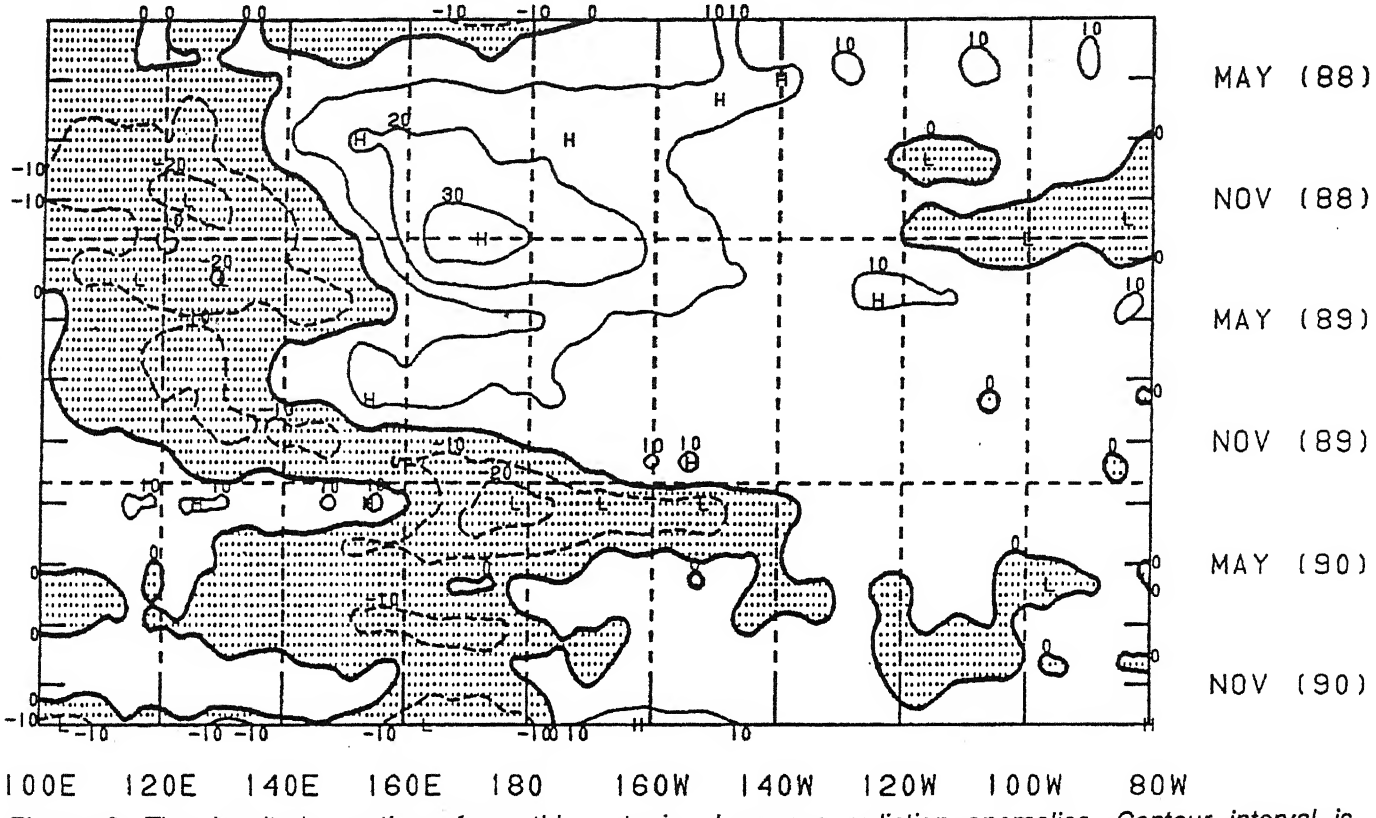


Figure 3. Time-longitude section of monthly outgoing longwave radiation anomalies. Contour interval is 10 Wm^{-2}. Shading indicates negative anomalies. Anomalies are departures from the 1979-1988 base period mean. A 1-2-1 filter in time is used on all points prior to the current month.

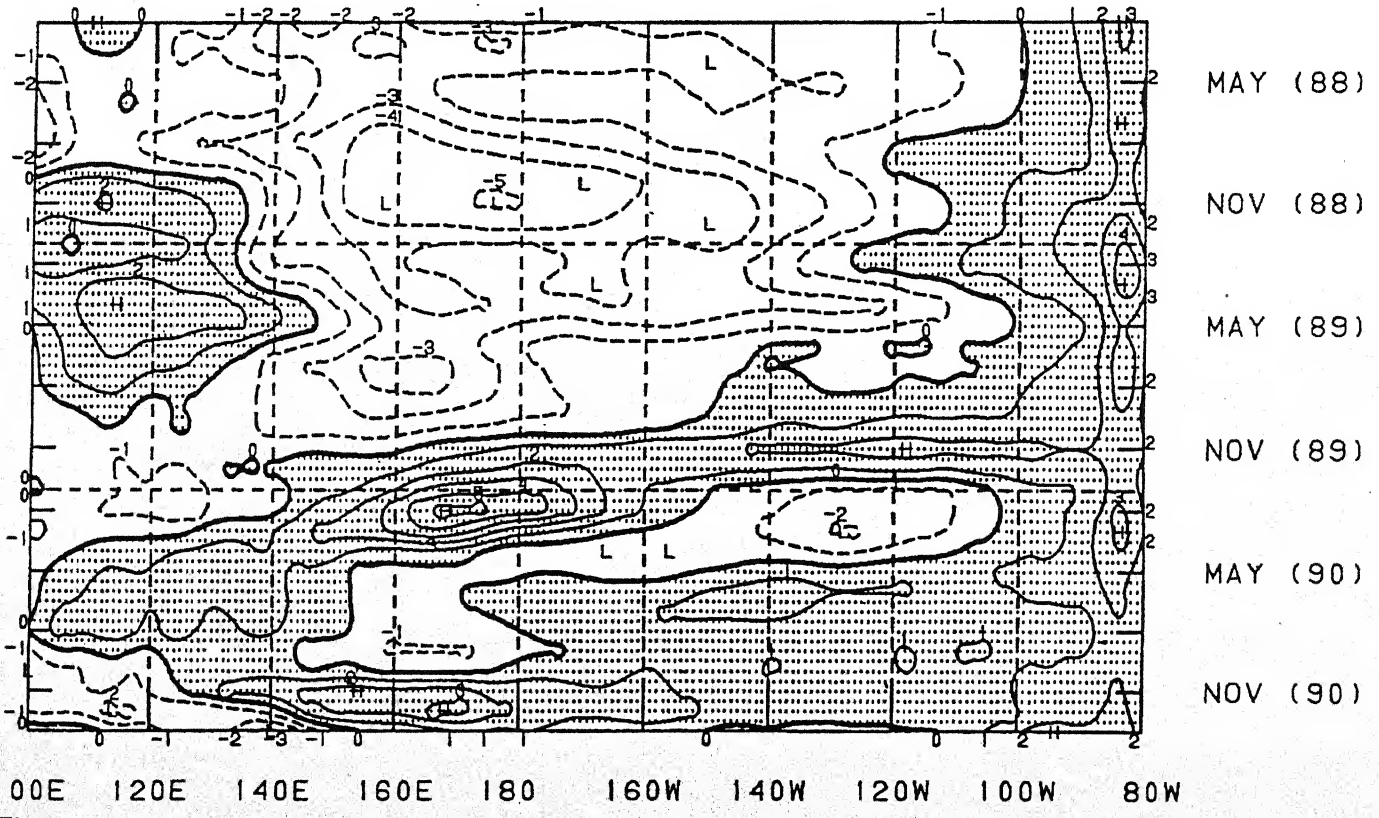
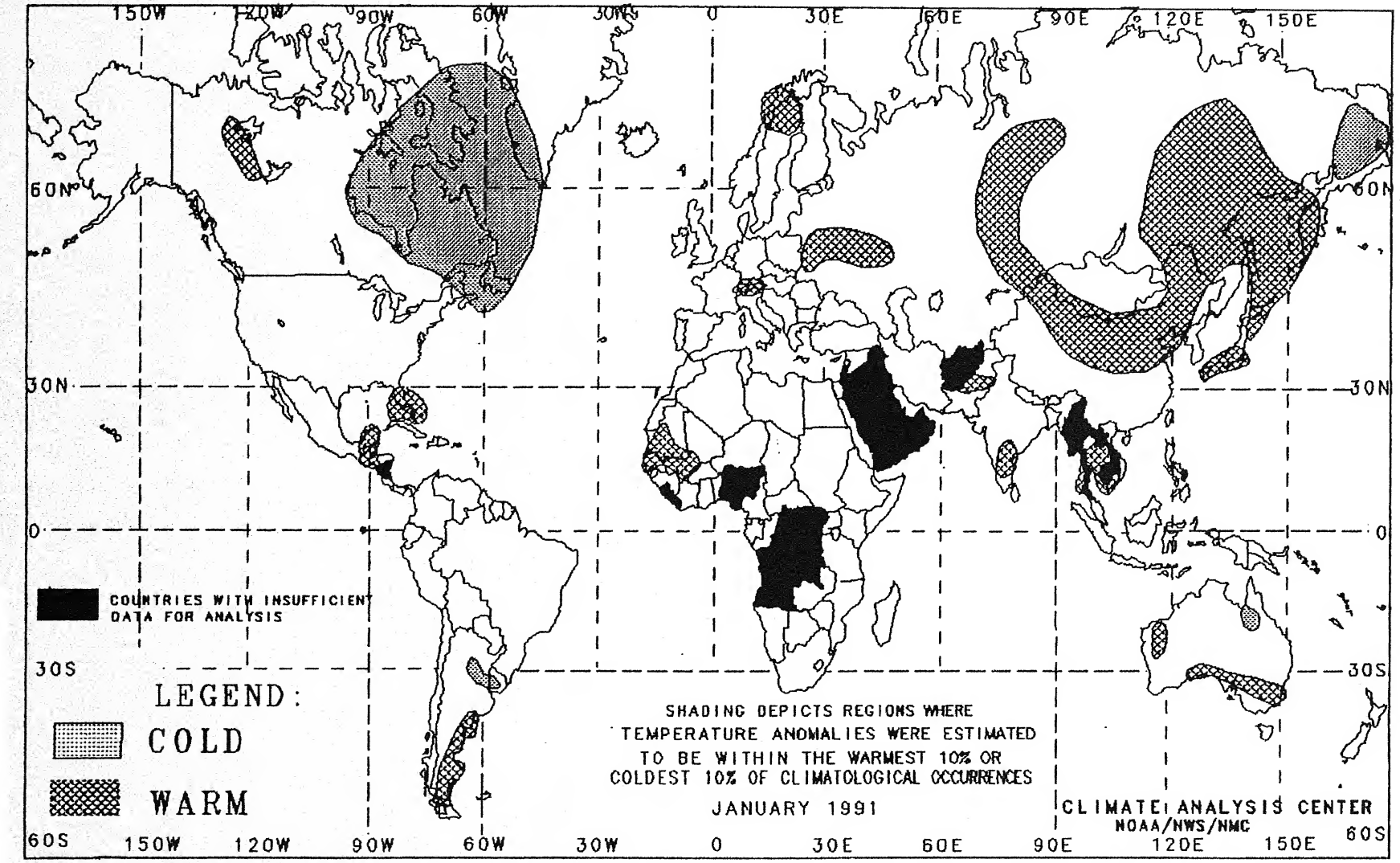


Figure 4. Time-longitude section of monthly 850 mb zonal wind anomalies for 5°N-5°S. Contour intervals are 1 ms^{-1}. Dashed contours indicate easterly anomalies. Westerly anomalies are shaded. A 1-2-1 filter in time is used on all points prior to the current month. Anomalies are departures from the 1979-1988 base period monthly means.

GLOBAL TEMPERATURE ANOMALIES

JANUARY 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 26 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warM anomalies.

Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of one month temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

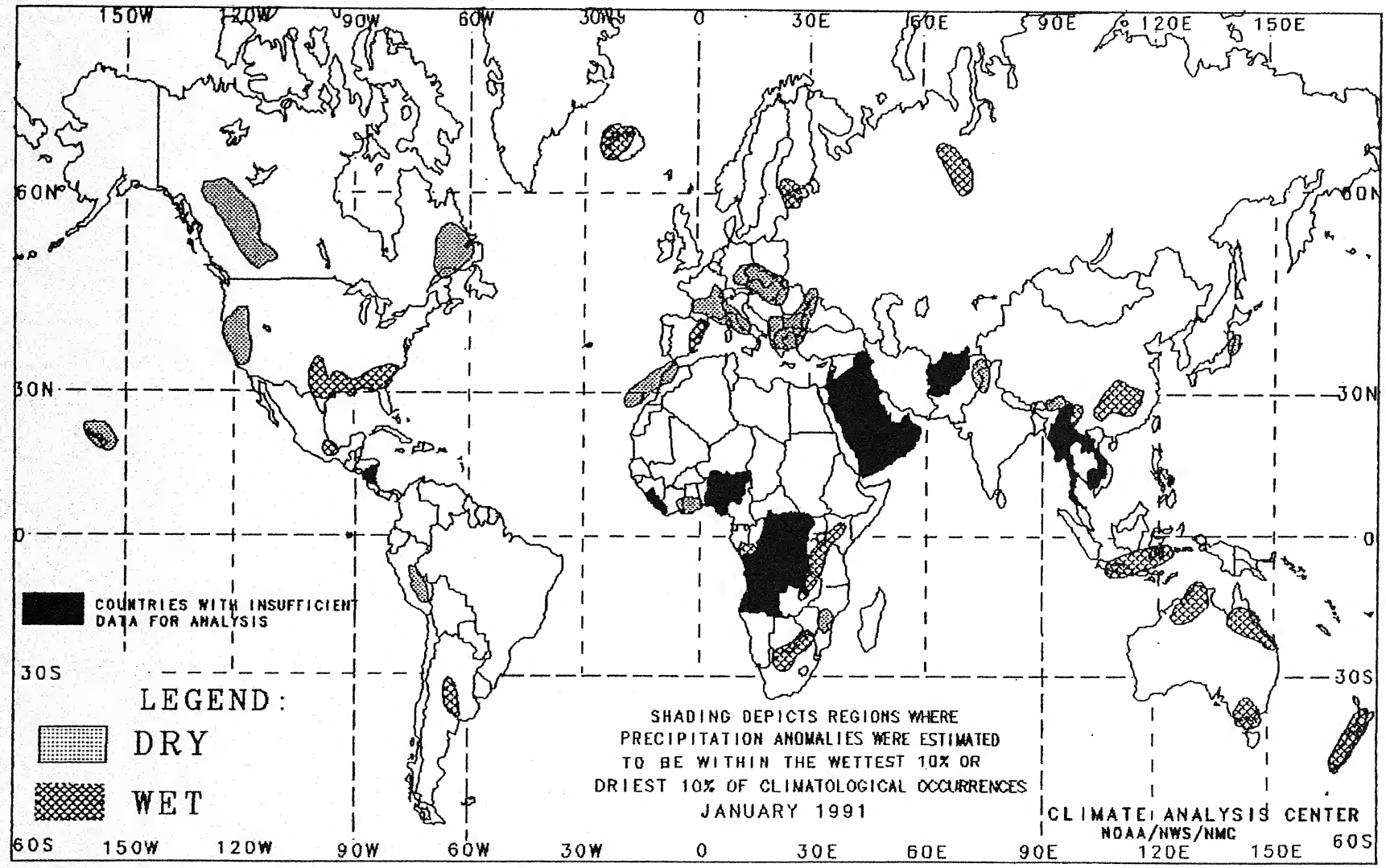
PRINCIPAL TEMPERATURE ANOMALIES

JANUARY 1991

REGIONS AFFECTED	TEMPERATURE AVERAGE (°C)	DEPARTURE FROM NORMAL (°C)	COMMENTS
NORTH AMERICA			
Northwestern Canada	−23 to −22	Around +6	MILD – 2 to 9 weeks
Eastern Canada and Western Greenland	−35 to −2	−2 to −8	COLD – 4 to 14 weeks
Florida and the Bahamas	+19 to +24	+3 to +4	WARM – 6 to 18 weeks
Central America	+19 to +26	Around +2	WARM – 7 to 8 weeks
SOUTH AMERICA AND EASTERN PACIFIC			
Northeastern Argentina and Western Uruguay	+23 to +24	Around −2	Very cold second half of January
Southeastern Argentina	+14 to +25	Around +2	Very warm first half of January
EUROPE AND THE MIDDLE EAST			
Central Norway and Northern Sweden	−10 to +1	+3 to +6	Very mild second half of January
Austria and Switzerland	−10 to −5	+3 to +4	MILD – 4 to 5 weeks
Central European Soviet Union	−6 to −3	+4 to +5	MILD – 2 to 4 weeks
AFRICA			
Western Sahel	+22 to +27	+2 to +3	WARM – 2 to 7 weeks
ASIA			
Central and Eastern Asia	−41 to +2	+2 to +10	MILD – 2 to 30 weeks
Extreme Eastern Siberia	−39 to −25	−7 to −8	COLD – 5 weeks
Central and Western Japan	+2 to +19	Around +2	WARM – 4 to 5 weeks
Pakistan	+5 to +16	+2 to +3	WARM – 6 weeks
Extreme Southern India	Around +23	Around +2	WARM – 2 to 4 weeks
Thailand and Vietnam	+25 to +28	+2 to +3	WARM – 4 to 9 weeks
AUSTRALIA AND WESTERN PACIFIC			
Western Australia	+33 to +35	+2 to +3	WARM – 2 to 4 weeks
Northeastern Australia	+27 to +28	Around −2	Very cool first half of January
Southern Australia	+22 to +28	+2 to +3	Very warm first half of January

GLOBAL PRECIPITATION ANOMALIES

JANUARY 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the one month period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total one month precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of one month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

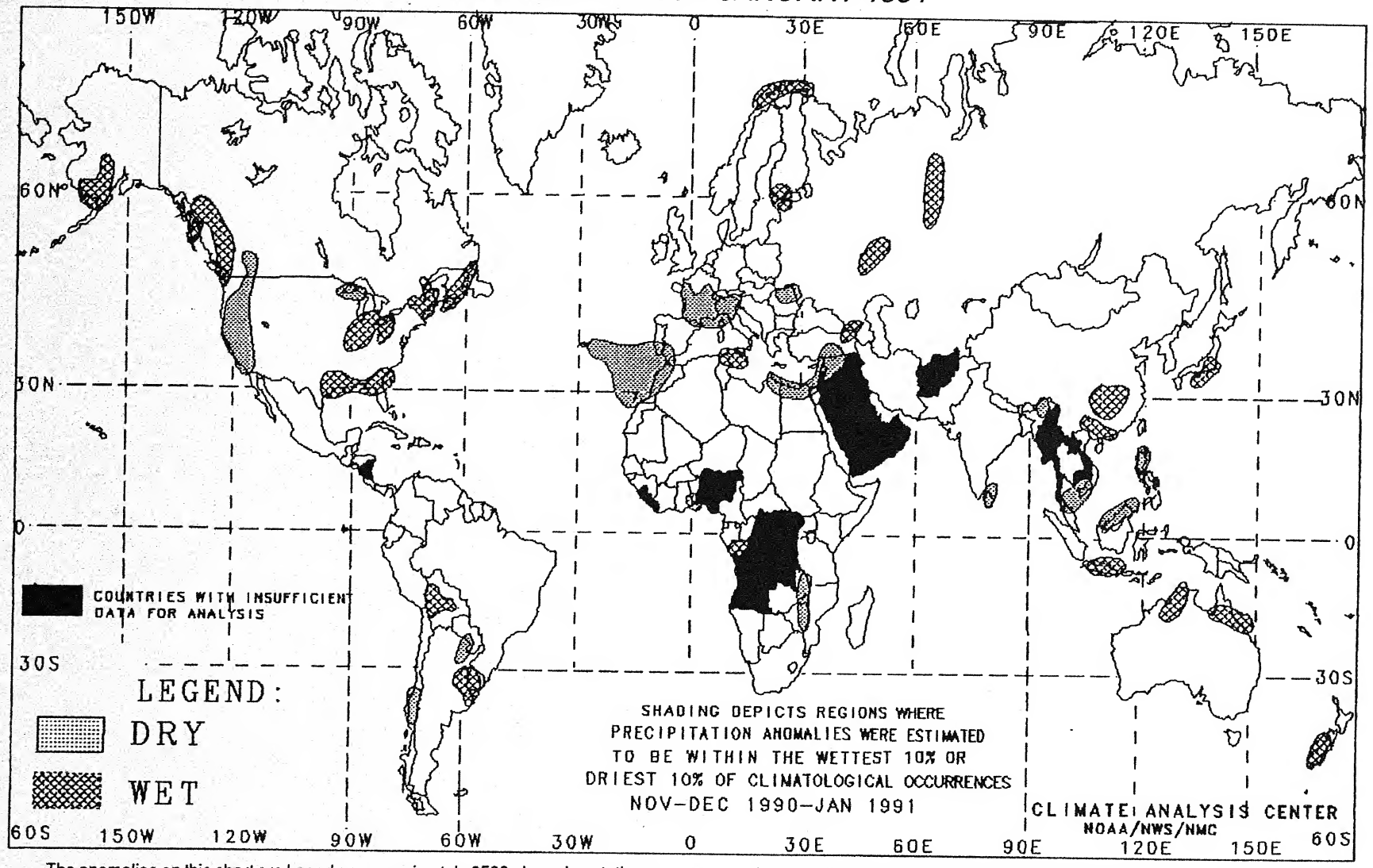
PRINCIPAL PRECIPITATION ANOMALIES

JANUARY 1991

REGIONS AFFECTED	PRECIPITATION TOTAL (MM)	PERCENT OF NORMAL	COMMENTS
NORTH AMERICA			
Southwestern Canada	0 to 58	0 to 36	DRY – 5 to 10 weeks
Western United States	1 to 42	1 to 31	DRY – 10 to 14 weeks
Eastern Canada	10 to 53	21 to 56	DRY – 5 to 6 weeks
Southeastern United States	53 to 489	189 to 580	WET – 2 to 10 weeks
East Central Mexico	88 to 144	260 to 411	Heavy precipitation second half of January
Hawaiian Islands	2 to 17	2 to 11	DRY – 10 weeks
SOUTH AMERICA AND EASTERN PACIFIC			
Cook Islands	0 to 141	0 to 34	DRY – 9 to 18 weeks
Peru	22 to 69	15 to 46	DRY – 5 to 8 weeks
Central Argentina	196 to 229	201 to 292	WET – 2 to 6 weeks
EUROPE AND THE MIDDLE EAST			
Western Iceland	98 to 131	175 to 186	WET – 4 weeks
Southern Finland	69 to 100	190 to 253	Heavy precipitation first half of January
East Central Europe	1 to 18	6 to 42	DRY – 4 to 9 weeks
Balkan States and Southwestern European Soviet Union	5 to 36	10 to 32	DRY – 6 to 7 weeks
Southern France and Western Italy	4 to 27	5 to 37	DRY – 7 to 10 weeks
Eastern Spain	74 to 204	290 to 475	Heavy precipitation second half of January
AFRICA			
Canary Islands and Morocco	2 to 15	4 to 15	DRY – 6 to 14 weeks
Ivory Coast	1 to 3	3 to 13	DRY – 5 weeks
Western Congo	301 to 333	190 to 272	Heavy precipitation second half of January
East Central Africa	119 to 471	149 to 220	WET – 2 to 4 weeks
Mozambique	18 to 88	8 to 32	DRY – 4 weeks
South Africa	140 to 200	188 to 480	WET – 2 to 4 weeks
ASIA			
Northwestern Siberia	47 to 53	176 to 307	WET – 7 to 8 weeks
Extreme Northern India	0 to 9	0 to 14	DRY – 10 weeks
Extreme Eastern India	Near Zero	Near Zero	DRY – 10 weeks
Southwestern China	88 to 89	281 to 512	Heavy precipitation first half of January
Southeastern China	51 to 135	158 to 336	WET – 2 to 9 weeks
Japan	5 to 6	7 to 13	DRY – 10 weeks
AUSTRALIA AND WESTERN PACIFIC			
Indonesia	320 to 559	155 to 216	Heavy precipitation first half of January
North Central Australia	438 to 922	185 to 301	WET – 2 to 4 weeks
Northeastern Australia	288 to 842	201 to 323	WET – 4 to 6 weeks
Southeastern Australia	88 to 137	237 to 331	WET – 6 to 8 weeks
New Zealand	188 to 619	196 to 281	WET – 4 to 10 weeks

GLOBAL PRECIPITATION ANOMALIES

NOVEMBER 1990 – JANUARY 1991

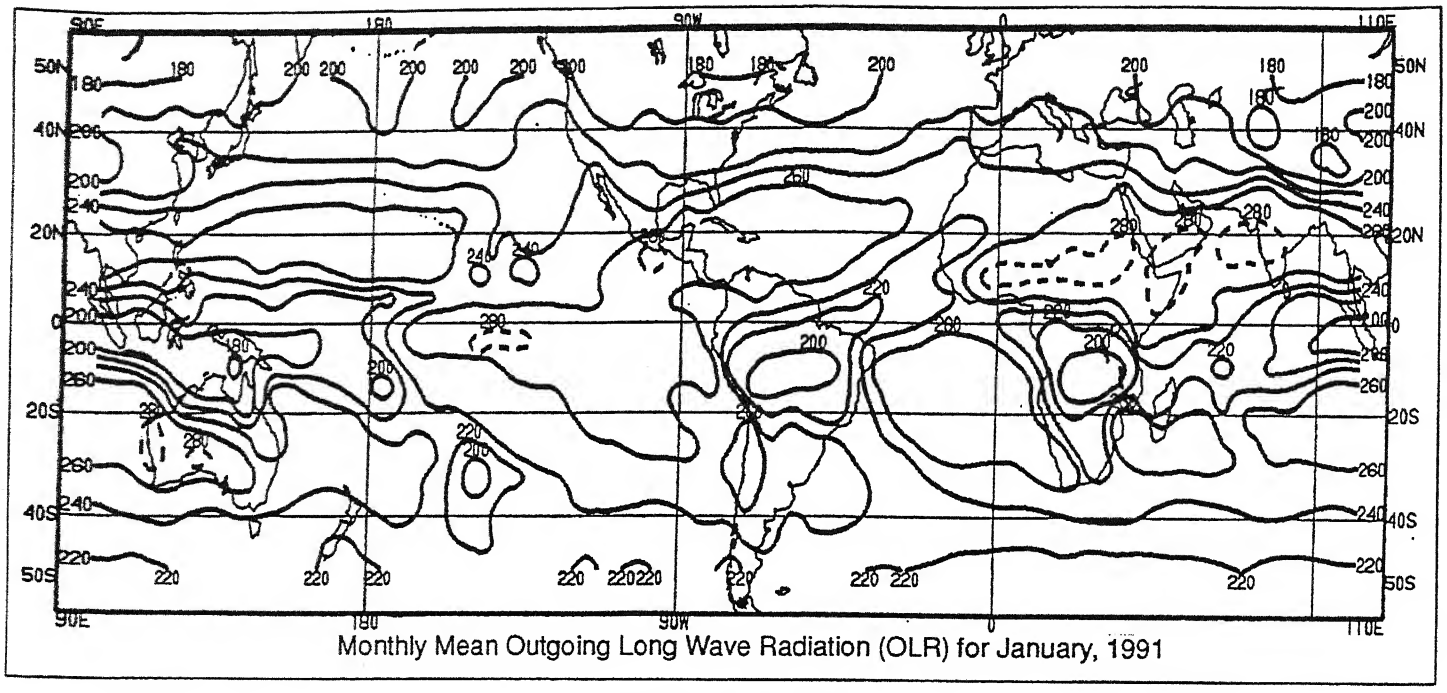


The anomalies on this chart are based on approximately 2500 observing stations for which at least 81 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies

In climatologically arid regions where normal precipitation for the three month period is less than 50 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total three month precipitation exceeds 125 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

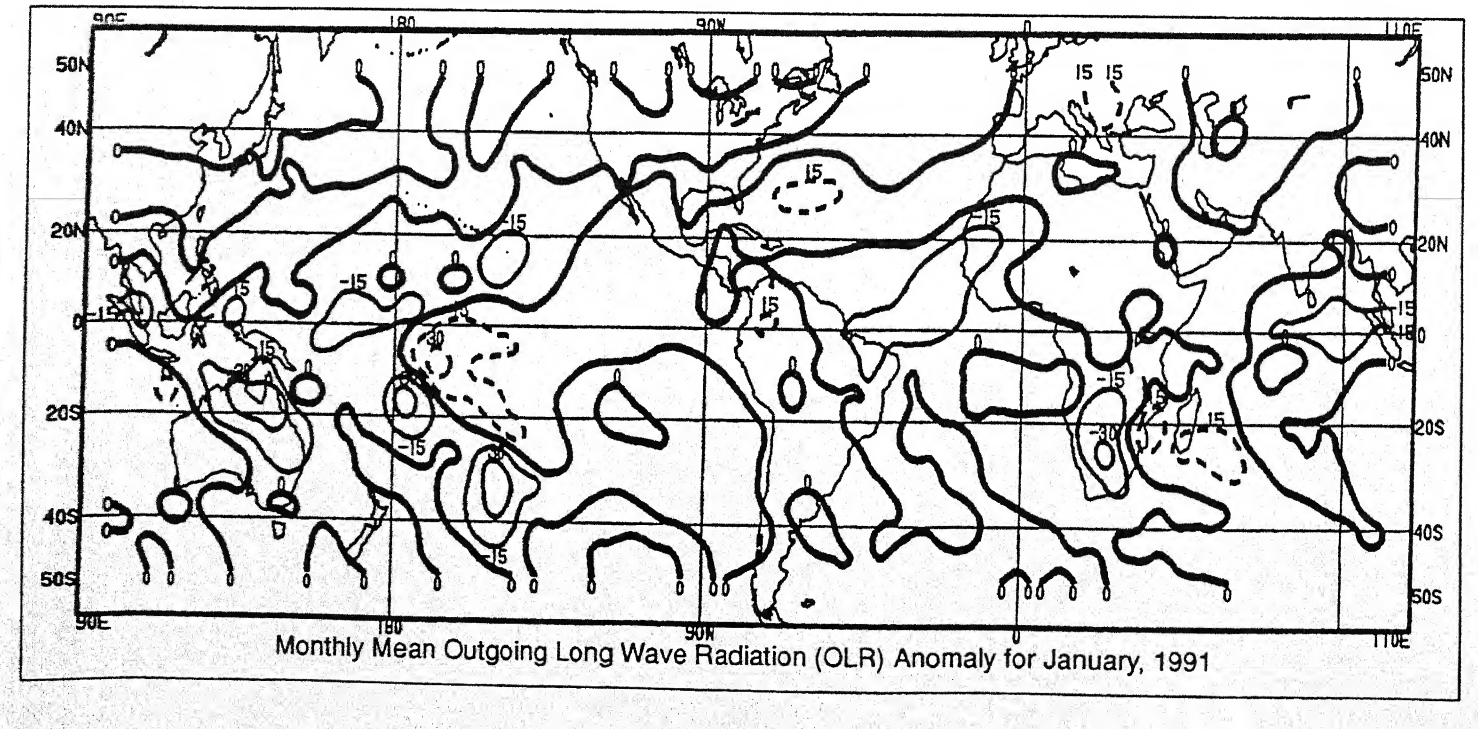


Monthly Mean Outgoing Long Wave Radiation (OLR) for January, 1991

EXPLANATION

The mean monthly outgoing long wave radiation (OLR) as measured by the NOAA–9 AVHRR IR window channel by NESDIS/SRL (top). Data are accumulated and averaged over 2.5° areas to a 5° Mercator grid for display. Contour intervals are 20 Wm^{-2}, and contours of 280 Wm^{-2} and above are dashed. In tropical areas (for our purposes 20°N – 20°S) that receive primarily convective rainfall, a mean OLR value of less than 200 Wm^{-2} is associated with significant monthly precipitation, whereas a value greater than 260 Wm^{-2} normally indicates little or no precipitation. Care must be used in interpreting this chart at higher latitudes, where much of the precipitation is non–convective, or in some tropical coastal or island locations, where precipitation is primarily orographically induced. The approximate relationship between mean OLR and precipitation amount does not necessarily hold in such locations.

The mean monthly outgoing long wave radiation anomalies (bottom) are computed as departures from the 1979 – 1988 base period mean. Contour intervals are 15 Wm^{-2}, while positive anomalies (greater than normal OLR, suggesting less than normal cloud cover and/or precipitation) are dashed and negative anomalies (less than normal OLR, suggesting greater than normal cloud cover and/or precipitation) are solid.



Monthly Mean Outgoing Long Wave Radiation (OLR) Anomaly for January, 1991